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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,136	11/18/2003	Jaishankar Moothedath Menon	ARC920030069US1	7019
55508	7590	02/28/2006	EXAMINER	
JOSEPH P. CURTIN, L.L.C. 1469 N.W. MORGAN LANE PORTLAND, OR 97229-5291			KO, DANIEL BOKMIN	
			ART UNIT	PAPER NUMBER
			2189	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/716,136	Applicant(s) MENON ET AL.	
	Examiner Daniel B. Ko	Art Unit 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☒ Claim(s) 1, 16 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/18/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to the application filed on 11/18/2003. Claims 1-43 have been submitted for examination.

Claim Objections

Claims 1, 16, and 30 are objected to because of the following informalities: "n data information sectors with c redundancy information sectors" in claims 1, 16, and 30 are vague and indefinite. "n data information sectors with c redundancy information sectors" are not clearly defined. "c and n" values should be defined clearly. Appropriate correction is required.

Specification Objections

On paragraphs 12, 13, and 20 of the specification, "c redundancy information sectors" and "n data information sectors" are not clearly defined. "c and n" values should be defined clearly. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3, 8-9, 13-15, 18, 23-24, 28-29, 32, 37-38, 42-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaneda et al. (US Patent 5,958,067), hereinafter simply Kaneda.

Regarding claims 1, 16, and 30, Kaneda teaches a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors, the RAID-configured storage system having a plurality of storage units (See Fig. 1), the method comprising:

associating n data information sectors (Fig. 1, Data Area 391; column 7, lines 3-16) with c redundancy information sectors (Fig. 1, Parity Area 392; column 7, lines 3-16), the c redundancy information sectors being based on the n data information sectors; and

writing the n data information sectors with c redundancy information sectors on the same storage unit (Fig.1, Kaneda teaches the data area 391 and parity area 392 on the same storage unit 301).

Regarding claims 3, 18 and 32, Kaneda teaches a method, wherein the RAID-configured storage system is configured as a RAID 5 storage system (column 1, lines 34-62).

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Regarding claims 8, 23, and 37, Kaneda teaches a method, wherein the redundancy information is an XOR-based code (column 11, lines 6-23).

Regarding claims 9, 24, and 38, Kaneda teaches a method, wherein the redundancy information is a one-dimensional parity (column 9, lines 24-33).

Regarding claims 13, 28, and 42, Kaneda teaches a method, wherein the n data information sectors and the c redundancy information sectors are written consecutively (Fig. 1, Disk 301, Kaneda shows the Data Area 391 and Parity Area 392 are written consecutively).

Regarding claims 14, 29, and 43, Kaneda teaches a method, wherein the n data information sectors and the c redundancy information sectors are intermingled when written (Fig. 5, Disk 301, Kaneda shows the Data Area 391 and Parity Area 392 are intermingled when written).

Regarding claim 15, Kaneda teaches a method, further comprising:
receiving n data information sectors (Fig. 1, Data Area 391; column 7, lines 3-16); and
generating c redundant information sectors (Fig. 1, Parity Area 392; column 7, lines 3-16).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36, 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneda et al. (US Patent 5,958,067), in view of Hetzler et al. (US Patent Application 2005/0015700), hereinafter simply Hetzler.

Regarding claims 2, 17, and 31, Kaneda teaches a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors, the RAID-configured storage system having a plurality of storage units (See Fig. 1), the method comprising:

associating n data information sectors (Fig. 1, Data Area 391; column 7, lines 3-16) with c redundancy information sectors (Fig. 1, Parity Area 392; column 7, lines 3-

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16), the c redundancy information sectors being based on the n data information sectors; and

writing the n data information sectors with c redundancy information sectors on the same storage unit (Fig. 1, Kaneda teaches the data area 391 and parity area 392 on the same storage unit 301).

Kaneda fails to teach the RAID-configured storage system is configured as a RAID 6 storage system. Hetzler teaches a method, wherein the RAID-configured storage system is configured as a RAID 6 storage system (Paragraph 34).

At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the Kaneda with Hetzler. The motivation for doing so would have been an improved performance, protection and efficiency (See Hetzler, paragraph 20). Therefore, it would have been obvious to combine Kaneda with Hetzler for the benefit of an improved performance, protection and efficiency of an array configuration.

Regarding claims 4, 19, and 33, Hetzler teaches a method, wherein the RAID-configured storage system is configured as a RAID 51 storage system (paragraph 35).

Regarding claims 5, 20, and 34, Hetzler teaches a method, wherein the RAID-configured storage system is configured as a RAID 3+3 storage system (paragraphs 27 and 30).

Regarding claims 6, 21, and 35, Hetzler teaches a method, wherein the RAID-configured storage system is configured as a RAID N+3 storage system (paragraph 34).

Regarding claims 7, 22, and 36, Hetzler teaches a method, wherein the redundancy information is based on a Reed-Solomon code (paragraph 21 and 31).

Regarding claims 10, 25, and 39, Hetzler teaches a method, wherein the storage unit is a hard disk drive (paragraph 27).

Regarding claims 11, 26, and 40, Hetzler teaches a method, wherein the storage unit is an optical drive (paragraph 27).

Regarding claims 12, 27, and 41, Hetzler teaches a method, wherein the storage unit is a random access memory (paragraph 27).

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel B. Ko whose telephone number is 571-272-8194.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manorama Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Ko

Daniel B. Ko
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Mano Padmanabhan
2/21/06

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SUPERVISORY PATENT EXAMINER